

In the Claims

Listing of the Claims

This listing of claims will replace all prior versions, and listings, of the claims in the application.

1. (Currently Amended) A system for computer aided surgery navigation which includes a sensor adapted to sense position of a plurality of indicia attached by a reference frame to an item used in surgery and a computer functionality adapted to receive information from the sensor about position of the indicia and generate information corresponding to position and orientation of the item to which the indicia are attached, ~~the system~~ characterized in that:

 wherein the indicia are attached to the item using at least one registering and securing mechanism such that the indicia may attach only in a determined position and so that the indicia may be removed from the item and reattached without incorrect registration relative to the item; and ~~further characterized in that~~ wherein the registering and securing mechanism features a structure which allows the indicia to be selectively attached and detached from the item.
2. (Currently Amended) A system according to claim 1 ~~further characterized in that~~ wherein at least one of the indicia includes a reflective surface adapted to be sensed by an infrared sensor device or a transponder that emits energy when interrogated.
3. (Currently Amended) A system according to ~~any one of the preceding claims~~ claim 1 in which the registering and securing mechanism comprises a separate registering mechanism and a separate securing mechanism.

4. (Currently Amended) A system accordingly to ~~any one of claims 1-3~~claim 1 in which the registering and securing mechanism comprises at least one of a ball plunger, a retractable plunger, a male pin and female receptor, or a magnetic device.

5. (Currently Amended) A device for use in a computer aided surgical navigation system including a sensor adapted to sense position of a plurality of indicia attached by a reference frame to an item used in surgery, and computer functionality adapted to receive information from the sensor about position of the indicia and generate information corresponding to position and orientation of the item to which the indicia are attached; ~~the device characterized in that it includes~~comprising:

a reference frame to which the indicia may be attached, the reference frame adapted to be connected to the item; and

a registering and securing mechanism interposed between at least one indicium and the item;

~~the device further characterized in that~~wherein the indicia may only attach in a determined position so that they may be removed from the item and reattached without incorrect registration of the indicia relative to the item; and

~~further characterized in that~~wherein the registering and securing mechanism includes a structure which allows the indicia to be selectively attached and detached from the item.

6. (Currently Amended) A device according to claim 5 ~~further characterized in that~~wherein at least one of the indicia includes a reflective surface adapted to be sensed by an infrared sensor device or a transponder that emits energy when interrogated.

7. (Currently Amended) A device according to ~~any one of claims 5 or 6~~ claim 5 in which the registering and securing mechanism comprises a separate registering mechanism and a separate securing mechanism.
8. (Currently Amended) A device according to ~~any one of claims 5-7~~ claim 5 in which the registering and securing mechanism comprises at least one of a ball plunger, a retractable plunger, a male pin and female receptor, or a magnetic device.
9. (Currently Amended) A process for conducting a computer aided surgery including providing a computer aided surgery system including a sensor adapted to sense position of a plurality of indicia attached by a reference frame to an item used in surgery and computer functionality adapted to receive information from the sensor about position of the indicia and generate information corresponding to position and orientation of the item to which the indicia are attached; ~~the process characterized in that :~~
- wherein at least one of the indicia is attached to the item using a registering and securing mechanism such that the indicium may only attach in a determined position so that it may be removed from the item and reattached without incorrect registration of the indicium relative to the item; ~~and~~
- wherein the registering and securing mechanism features structure which allows the indicium to be selectively attached and detached from the item; ~~further characterized in that~~
- ~~in that~~ wherein the indicia are registered into the system; ~~further characterized in that~~
- wherein the item is navigated during surgery using the image rendered by the rendering functionality; ~~further characterized in that~~
- wherein at least one indicium is detached from the item; ~~further characterized in that~~
- wherein the indicium is repositioned into correct position and orientation relative to the item; and ~~further characterized in that~~

wherein the item continues to be navigated during surgery without the need to reregister the indicium into the system.

10. (Currently Amended) A computer aided surgery navigation system including a sensor adapted to sense position of a plurality of indicia attached by a reference frame to an item used in surgery and computer functionality adapted to receive information from the sensor about position of the indicia and generate information corresponding to position and orientation of the item to which the indicia are attached, ~~characterized in that~~ :

wherein at least one of the indicia is attached to the item using an adjustable securing mechanism adapted to allow a variety of securely fixed orientations of the indicia relative to the item; and ~~further characterized in that~~
wherein the adjustable securing mechanism features structure which allows the indicium to be selectively repositioned and resecured relative to the item.

11. (Original) A system according to claim 10 in which at least one of the indicia includes a fiducial or an active device.

12. (Currently Amended) A system according to ~~any one of claims 10-11~~ claim 10 in which the adjustable securing mechanism includes an adjustable rod with a base thumb screw for securing the adjustable rod.

13. (Currently Amended) A device for use in a computer aided surgical navigation system, the system including a sensor adapted to sense position of a plurality of indicia attached by a reference frame to an item used in surgery; computer functionality adapted to receive information from the sensor about position of the indicia and generate information corresponding to position and orientation of the item to which the indicia are attached, ~~characterized in that it includes~~ including:

a reference frame adapted to be connected to the item;

at least one indicium connected to the reference frame; and
an adjustable securing mechanism interposed between at least one indicium and the item, wherein the adjustable securing mechanism is configured such that the indicia may attach in a variety of rigidly fixed orientations relative to the item, and wherein the adjustable securing mechanism features structure which allows the indicium to be selectively repositioned and resecured relative to the item.

14. (Original) A device according to claim 13 in which at least one of the indicia includes a fiducial or an active device.

15. (Currently Amended) A device according to ~~any one of claims 13-14~~claim 13 in which the adjustable securing mechanism includes an adjustable rod with a base thumb screw for securing the adjustable rod.

16. (Currently Amended) A process for conducting computer aided surgery including providing a computer aided surgery system including a sensor adapted to sense position of a plurality of indicia attached by a reference frame to an item used in surgery, and a computer functionality adapted to receive information from the sensor about position of the indicia and generate information corresponding to position and orientation of the item to which the indicia are attached, ~~the process characterized in that:~~

wherein the indicia are attached to the item using an adjustable securing mechanism adapted to allow a variety of rigidly fixed orientations of the indicia relative to the item;

~~further characterized in that~~wherein the adjustable securing mechanism features structure which allows the indicia to be selectively repositioned and resecured relative to the item;

~~further characterized in that~~wherein the indicia are registered into the system;

~~further characterized in that~~wherein the item is navigated during surgery using the image rendered by the rendering functionality;

~~further characterized in that~~wherein at least one indicium needs to be repositioned due to an anatomical constraint, reduced array visibility, or other surgical need;

~~further characterized in that~~wherein the indicia are selectively repositioned relative to the item;

~~further characterized in that~~wherein the indicia are reregistered; and

~~further characterized in that~~wherein the item continues to be navigated during surgery without the need to remove the indicia from the underlying item.